

AD1608 Series

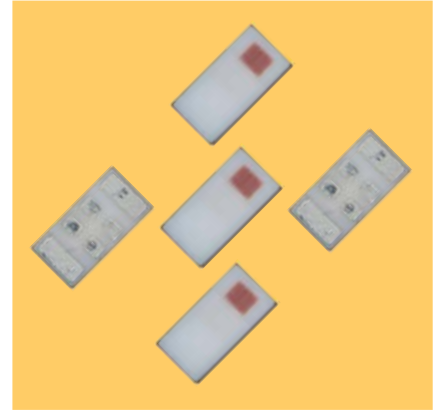
Multilayer Chip Antenna

Features

- ❖ Monolithic SMD with small, low-profile and light-weight type.
- ❖ Wide bandwidth
- ❖ RoHS compliant

Applications

- ❖ Dual-band 2.4/5.5 GHz WLAN



Specifications

Part Number	Frequency Range (MHz)	Peak Gain (dBi typ.)	Average Gain (dBi typ.)	VSWR	Impedance
AD1608 -A2455AA_	2400~2480	1.0(XZ-Total)	-3.5(XZ-Total)	6.5 max.	50 Ω
	5150~5850	4.0(XZ-Total)	-2.5(XZ-Total)	4.5 max.	50 Ω

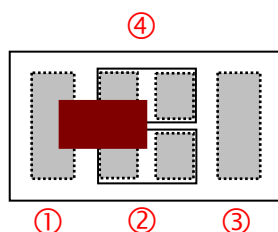
Q'ty/Reel (pcs) : 4,000 pcs
 Operating Temperature Range : -40 ~ +85 °C
 Storage Temperature Range : -40 ~ +85 °C
 Storage Period : 12 months max.
 Power Capacity : 3W max.

Part Number

AD 1608 - A 2455 AA □ □
 ① ② ③ ④ ⑤ ⑥ ⑦

① Type	AD : Dual-band Antenna	② Dimensions (L × W)	1.6× 0.8 mm
③ Material Code	A	④ Frequency Range	2455=2400/5500 MHz
⑤ Specification Code	AA	⑥ Packaging	T: Tape & Reel B: Bulk
⑦ Soldering	/LF=lead-free		

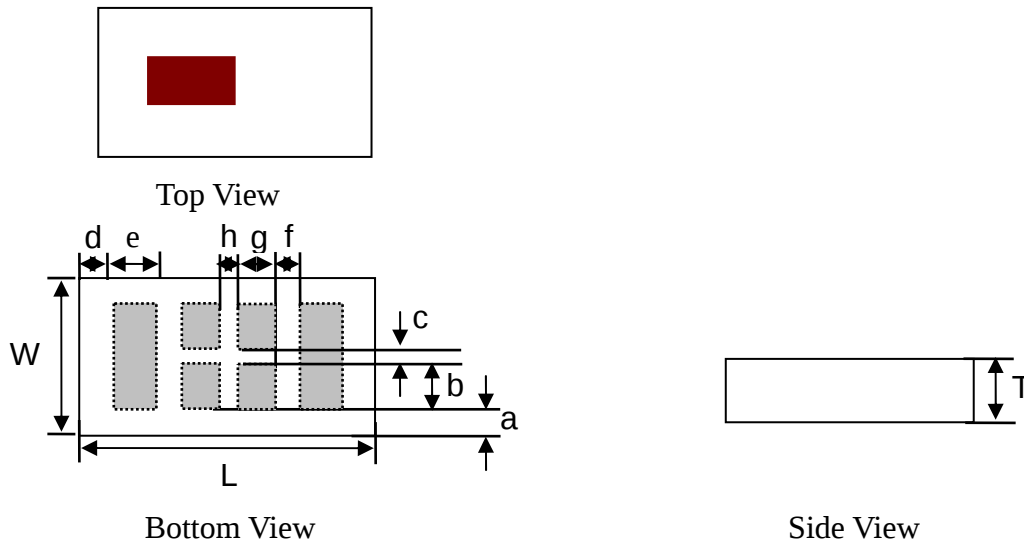
Terminal Configuration



No.	Scenario#1 Terminal Name	No.	Scenario#2 Terminal Name
①	GND	①	GND
②	Feed	②	NC
③	NC	③	NC
④	NC	④	Feed

Dimensions

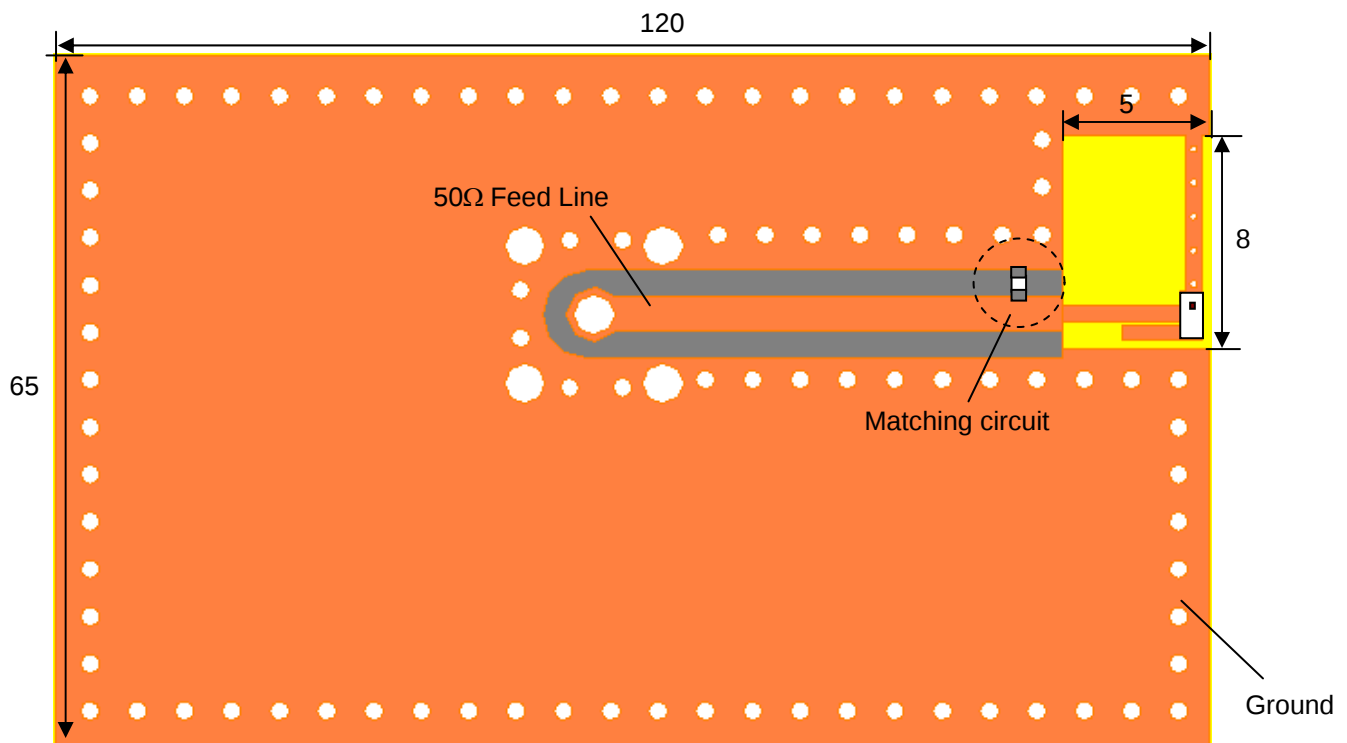
Unit: mm



Mark	L	W	T	a	b	c	d	e	f	g	h
Dimensions	1.6 ± 0.1	0.8 ± 0.1	0.4 max	0.086 ± 0.1	0.208 min	0.2 ± 0.03	0.085 ± 0.03	0.215 ± 0.05	0.25 ± 0.05	0.15 min	0.2 ± 0.03

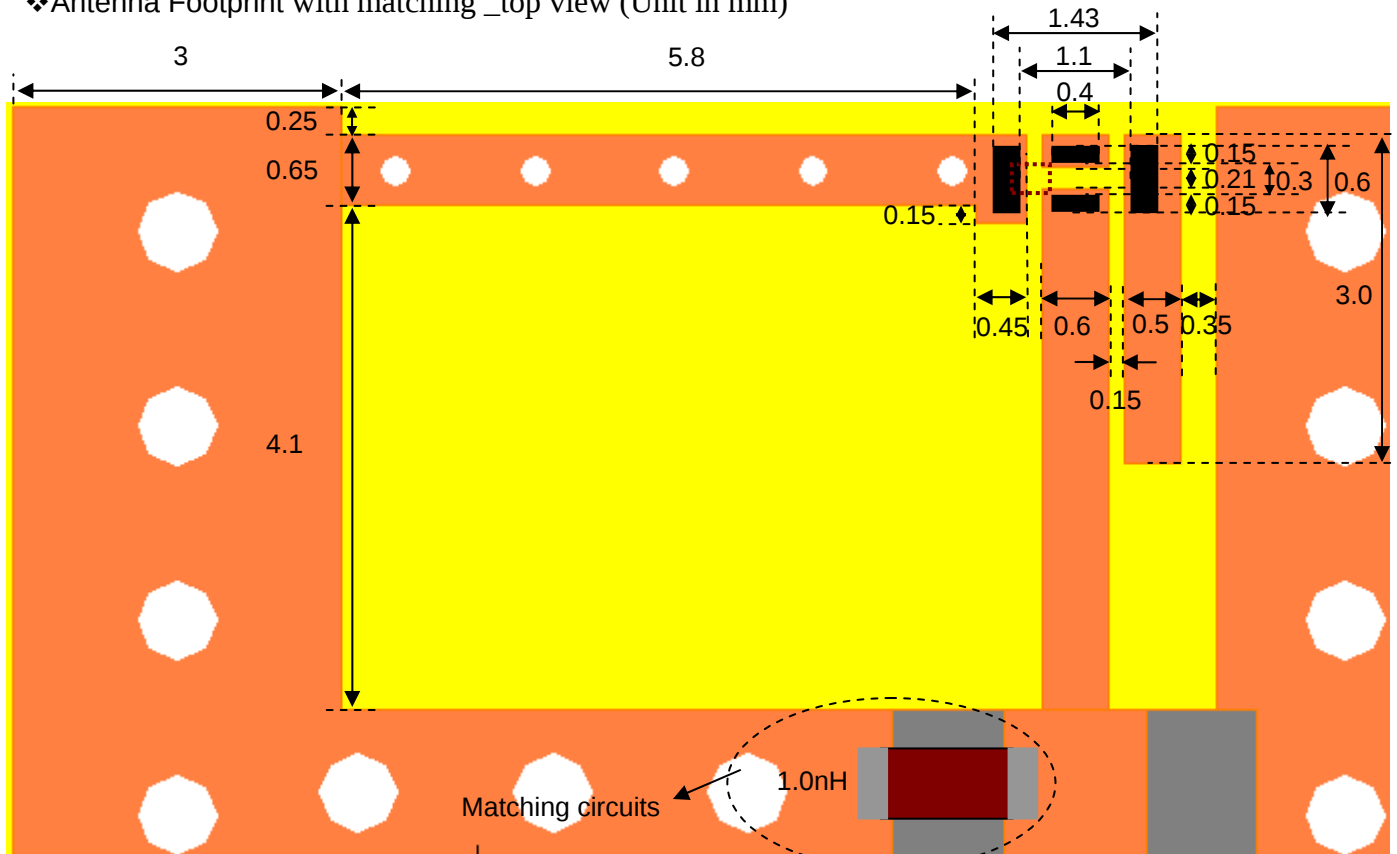
Typical Electrical Characteristics (T=25°C)

❖ Test Board –Type A (Scenario#1)

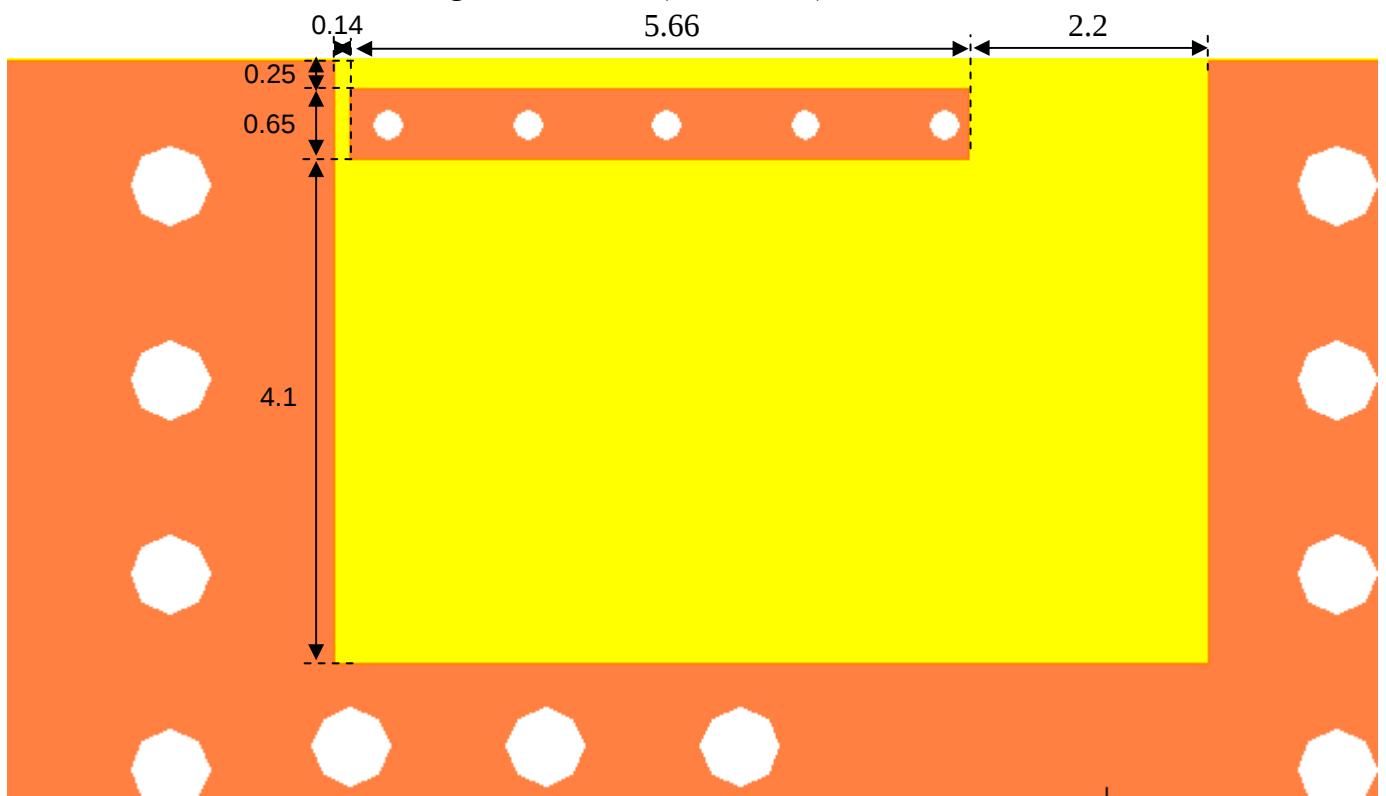


*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

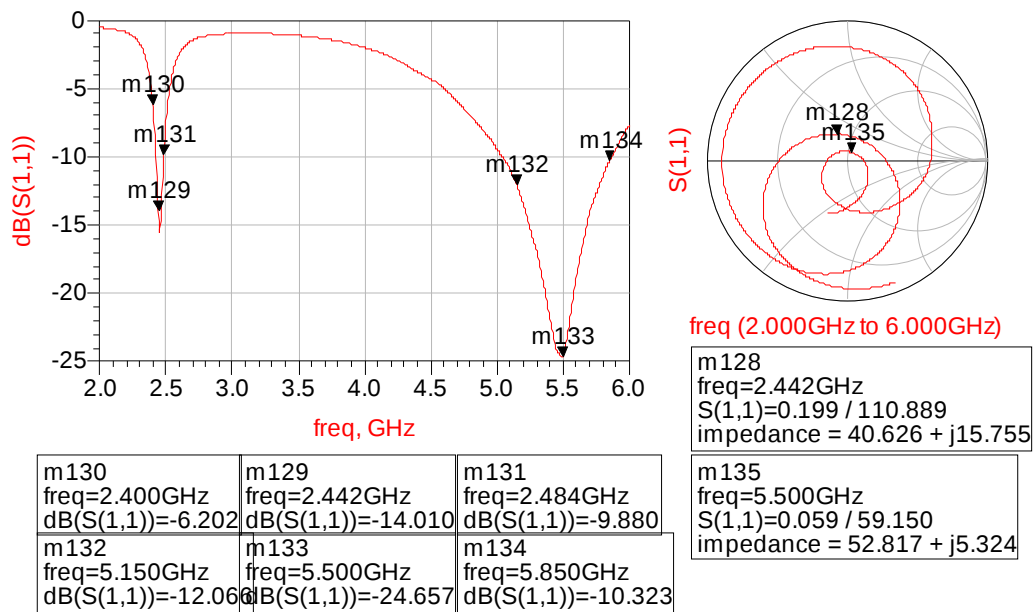
❖Antenna Footprint with matching _top view (Unit in mm)



❖Antenna Footprint with matching _bottom view (Unit in mm)

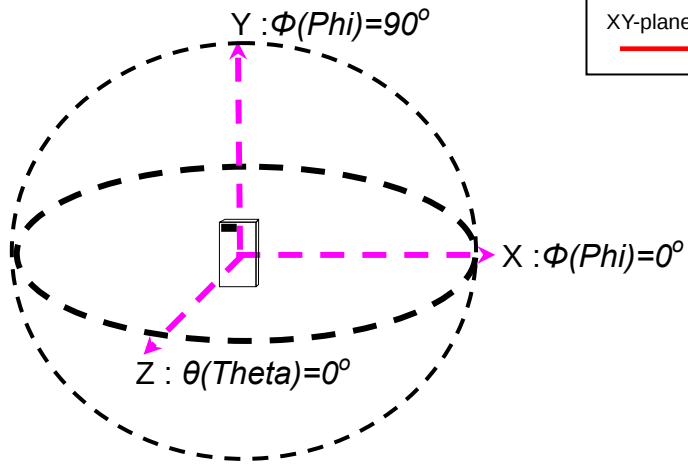


❖ Return Loss (with matching)

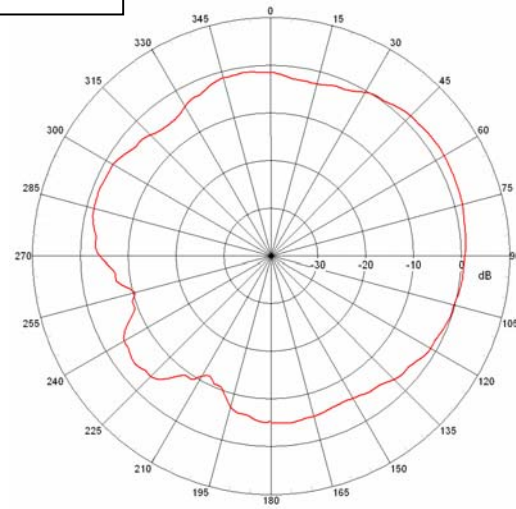


❖ Radiation Patterns@2.44GHz

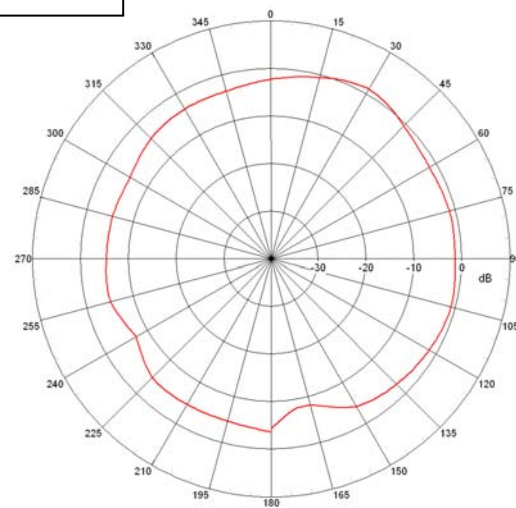
(Antenna Efficiency 42%@ 2.4GHz ; 60%@2.44GHz ; 56%@2.48GHz)



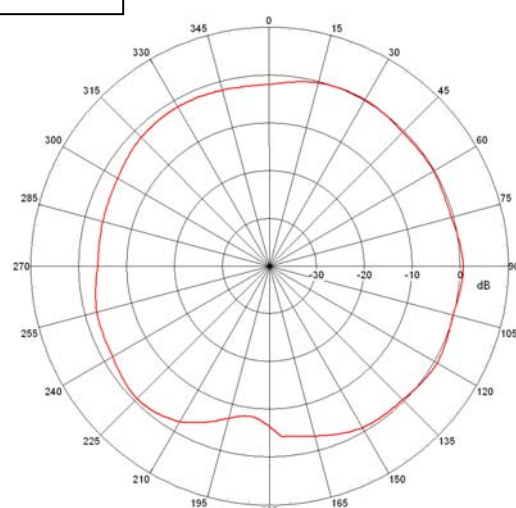
XY-plane @2440MHz
— Total



XZ-plane @2440MHz
— Total

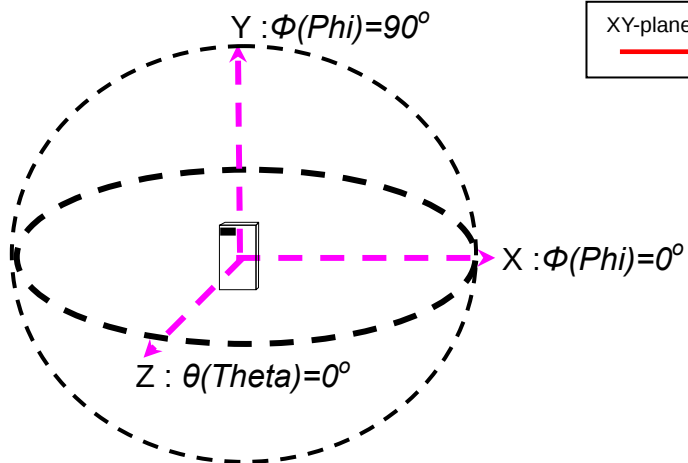


YZ-plane @2440MHz
— Total

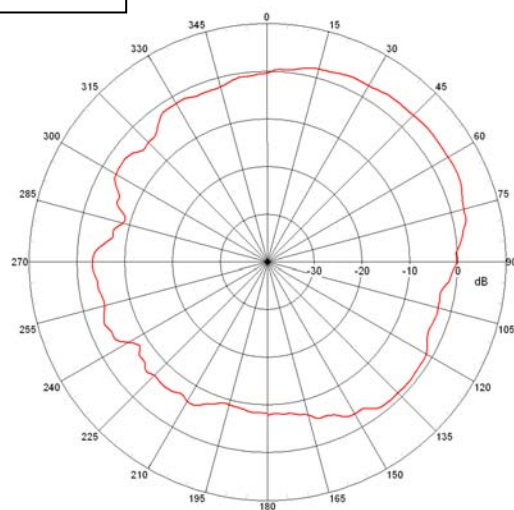


❖ Radiation Patterns@5.5GHz

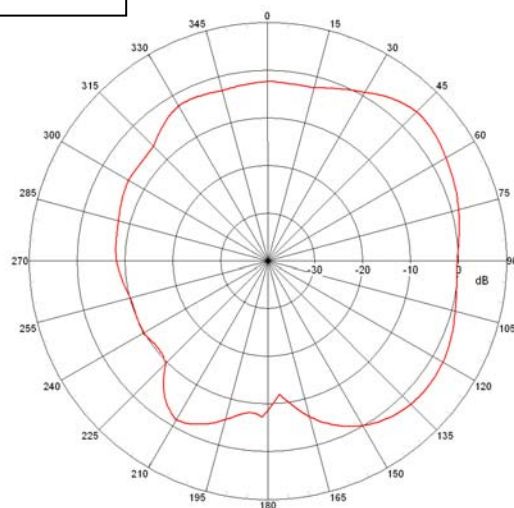
(Antenna Efficiency 78%@ 5.15GHz ; 86%@5.5GHz ; 76%@5.85GHz)



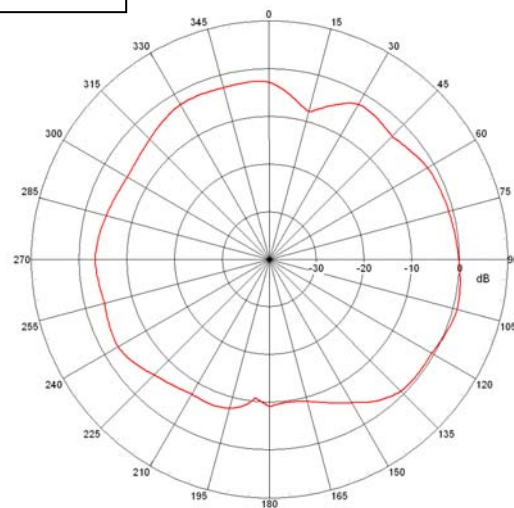
XY-plane @5500MHz
— Total



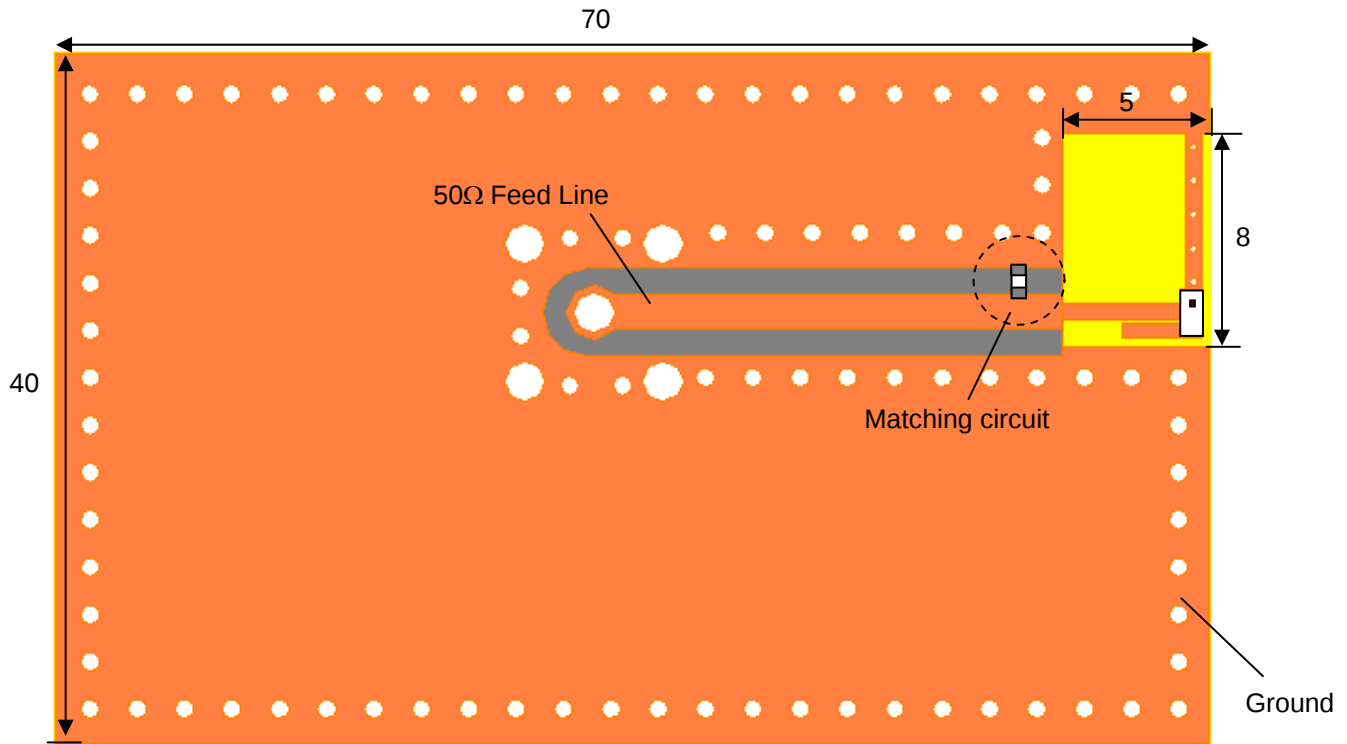
XZ-plane @5500MHz
— Total



YZ-plane @5500MHz
— Total

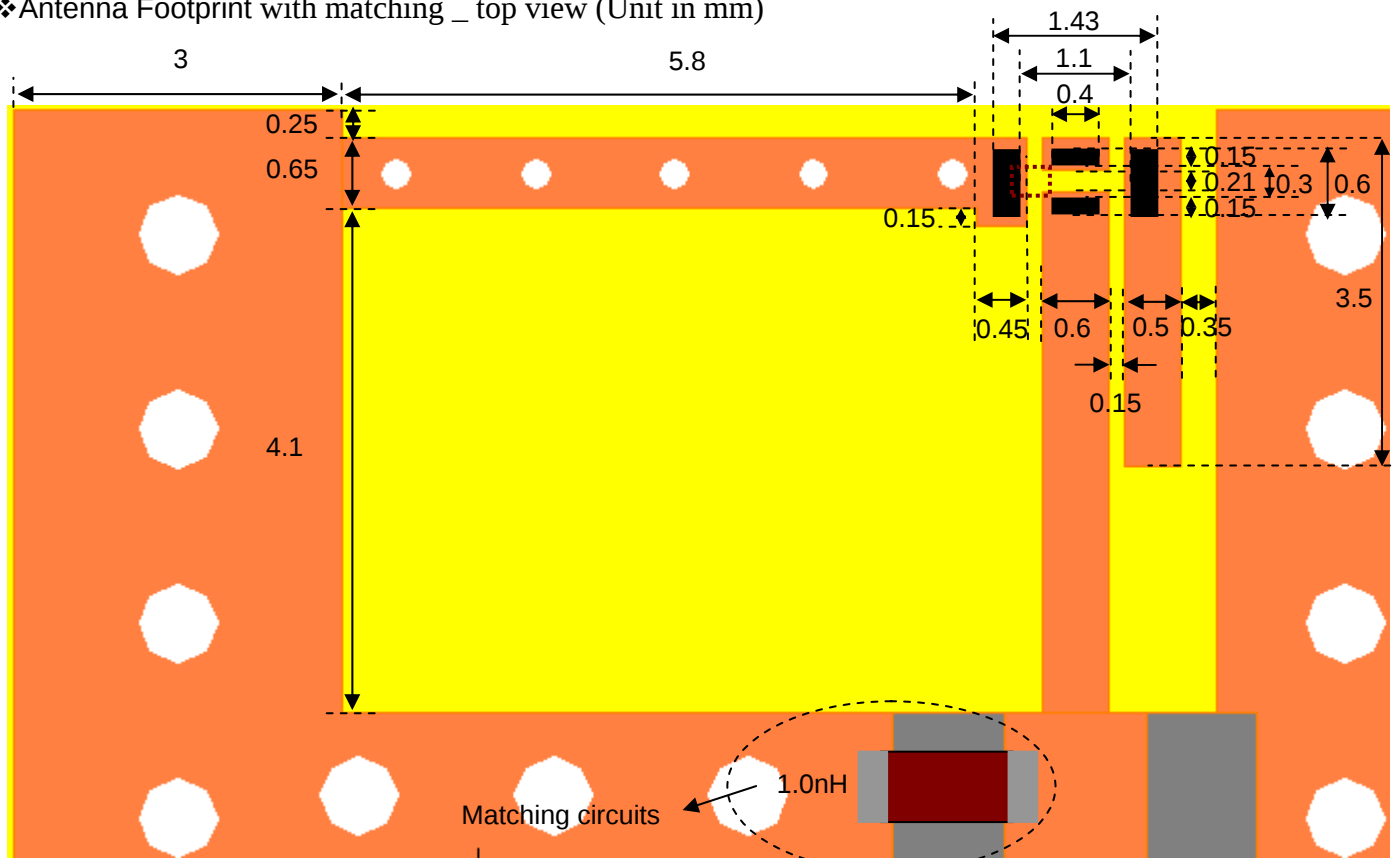


❖ Test Board-Type B (Scenario#1)

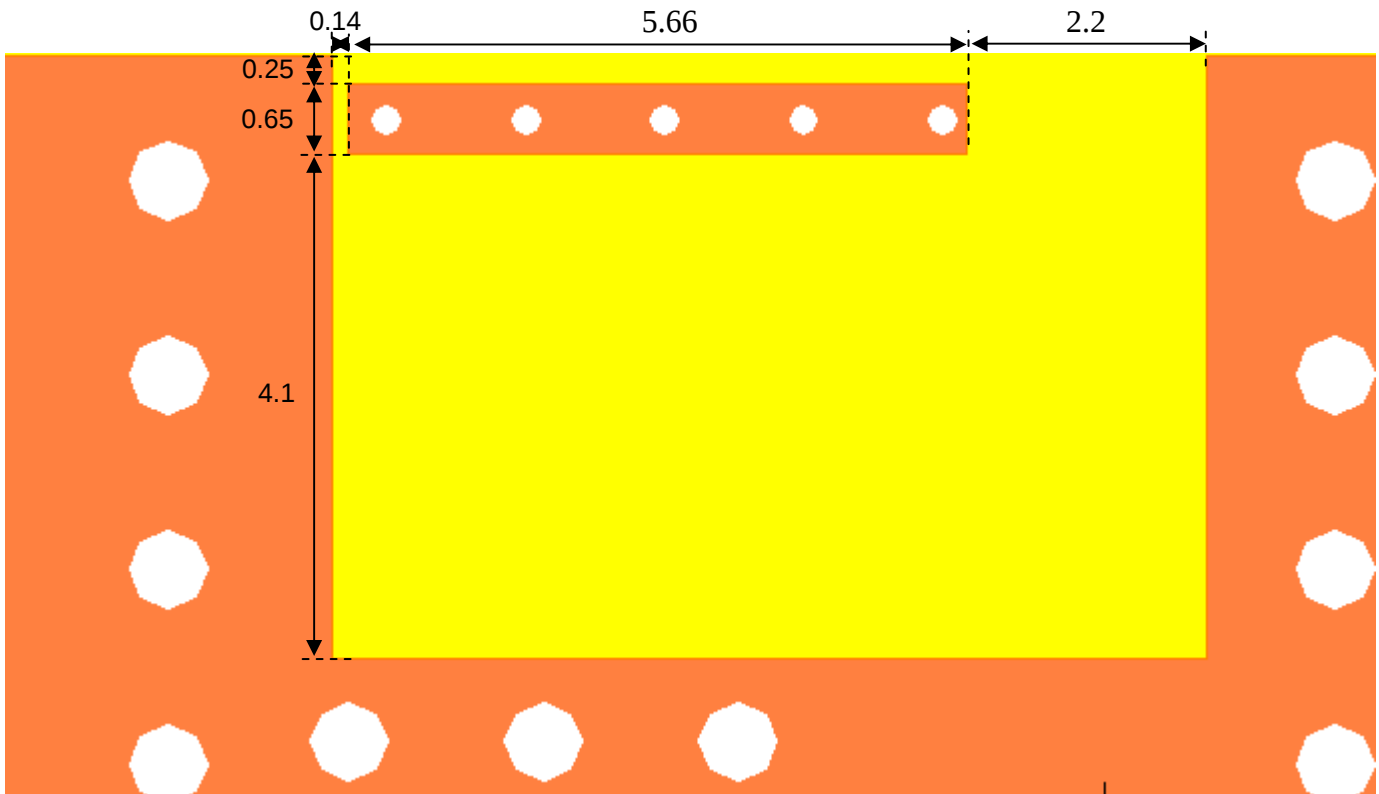


*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

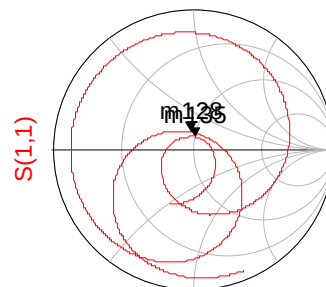
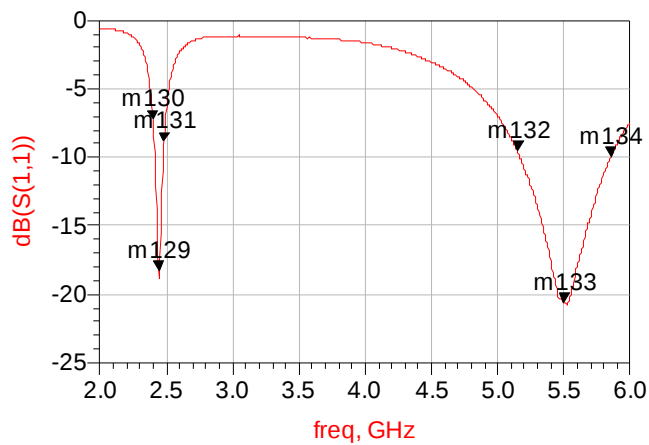
❖ Antenna Footprint with matching _ top view (Unit in mm)



❖ Antenna Footprint with matching _ bottom view (Unit in mm)



❖ Return Loss (with matching)



freq (2.000GHz to 6.000GHz)

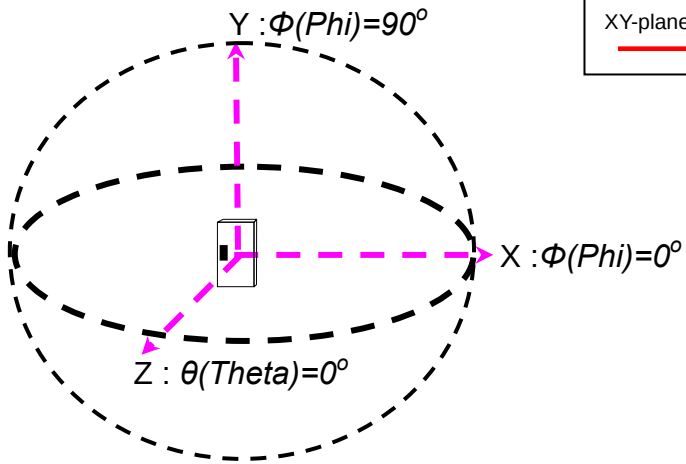
m128
freq=2.442GHz
S(1,1)=0.122 / 95.014
impedance = 47.527 + j11.753

m130 freq=2.400GHz dB(S(1,1))=-7.250	m129 freq=2.442GHz dB(S(1,1))=-18.254	m131 freq=2.484GHz dB(S(1,1))=-8.854
m132 freq=5.150GHz dB(S(1,1))=-9.557	m133 freq=5.500GHz dB(S(1,1))=-20.673	m134 freq=5.850GHz dB(S(1,1))=-10.013

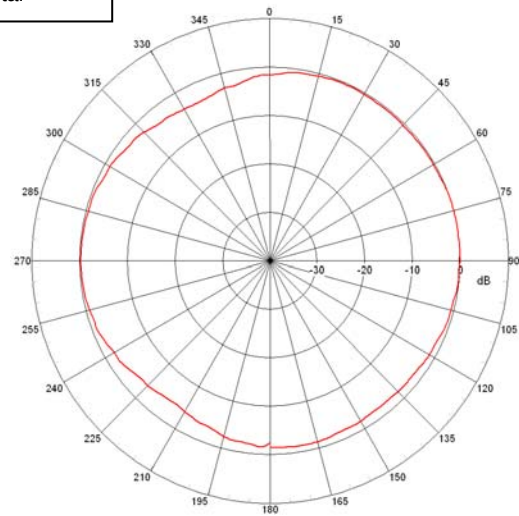
m135
freq=5.500GHz
S(1,1)=0.093 / 81.368
impedance = 50.543 + j9.329

❖ Radiation Patterns@2.44GHz

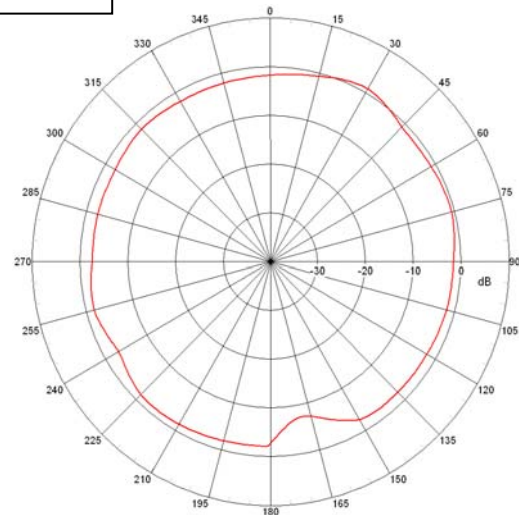
(Antenna Efficiency 48%@ 2.4GHz ; 66%@2.44GHz ; 60%@2.48GHz)



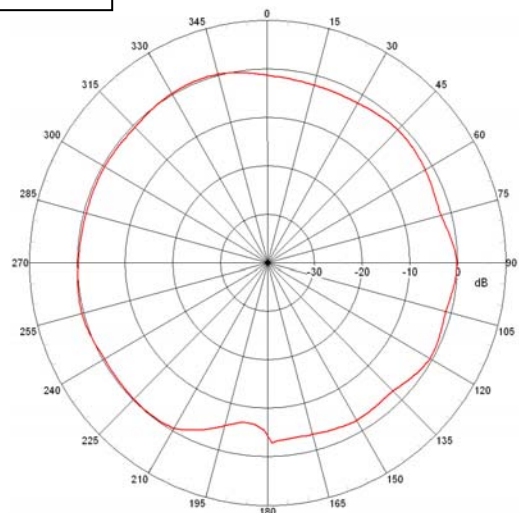
XY-plane @2440MHz
— Total



XZ-plane @2440MHz
— Total

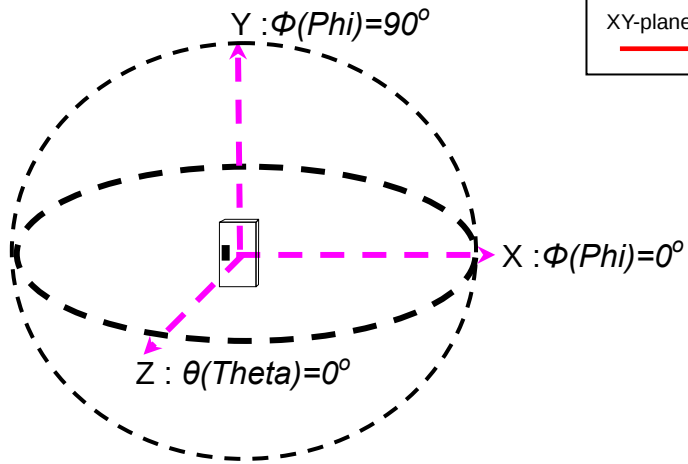


YZ-plane @2440MHz
— Total

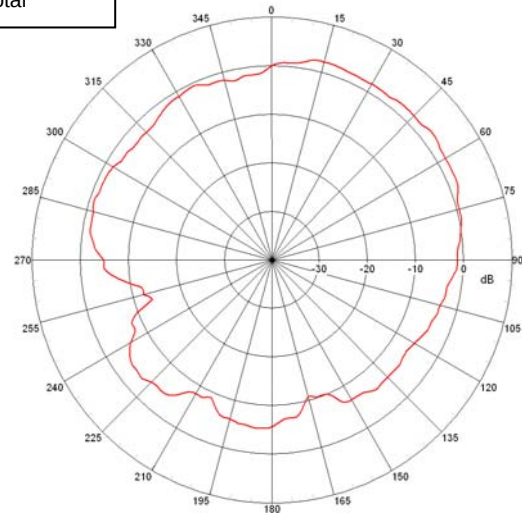


❖ Radiation Patterns@5.5GHz

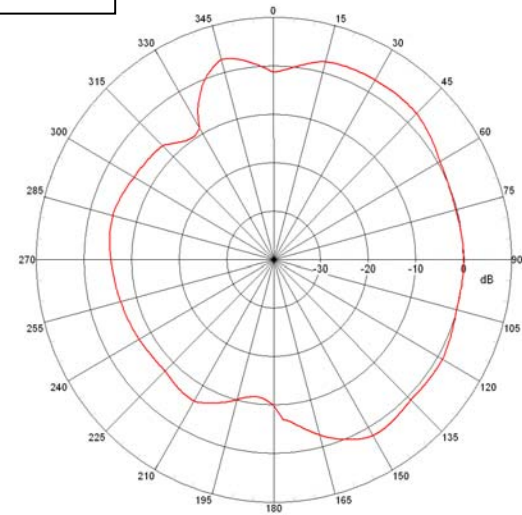
(Antenna Efficiency 70%@ 5.15GHz ; 79%@5.5GHz ; 67%@5.85GHz)



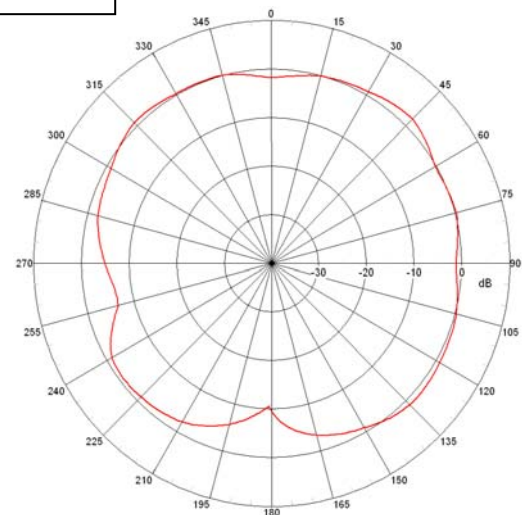
XY-plane @5500MHz
— Total



XZ-plane @5500MHz
— Total

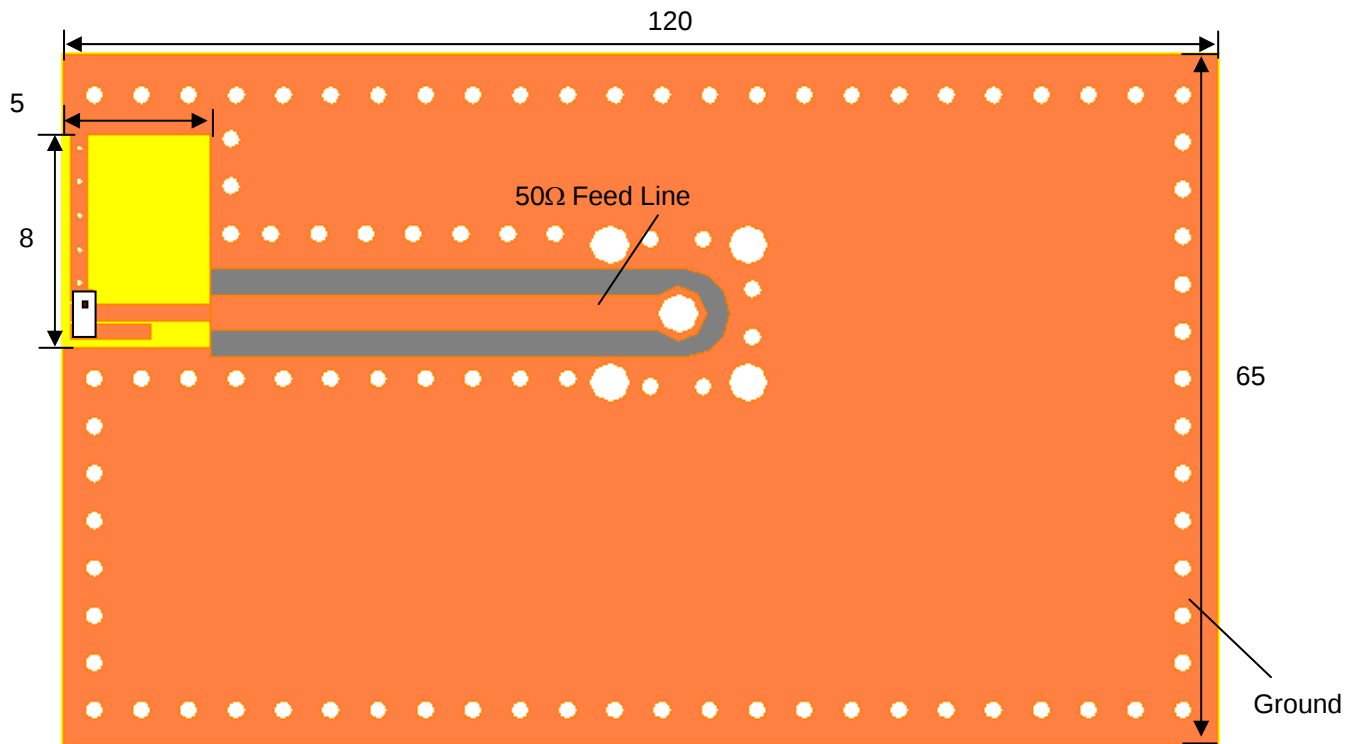


YZ-plane @5500MHz
— Total



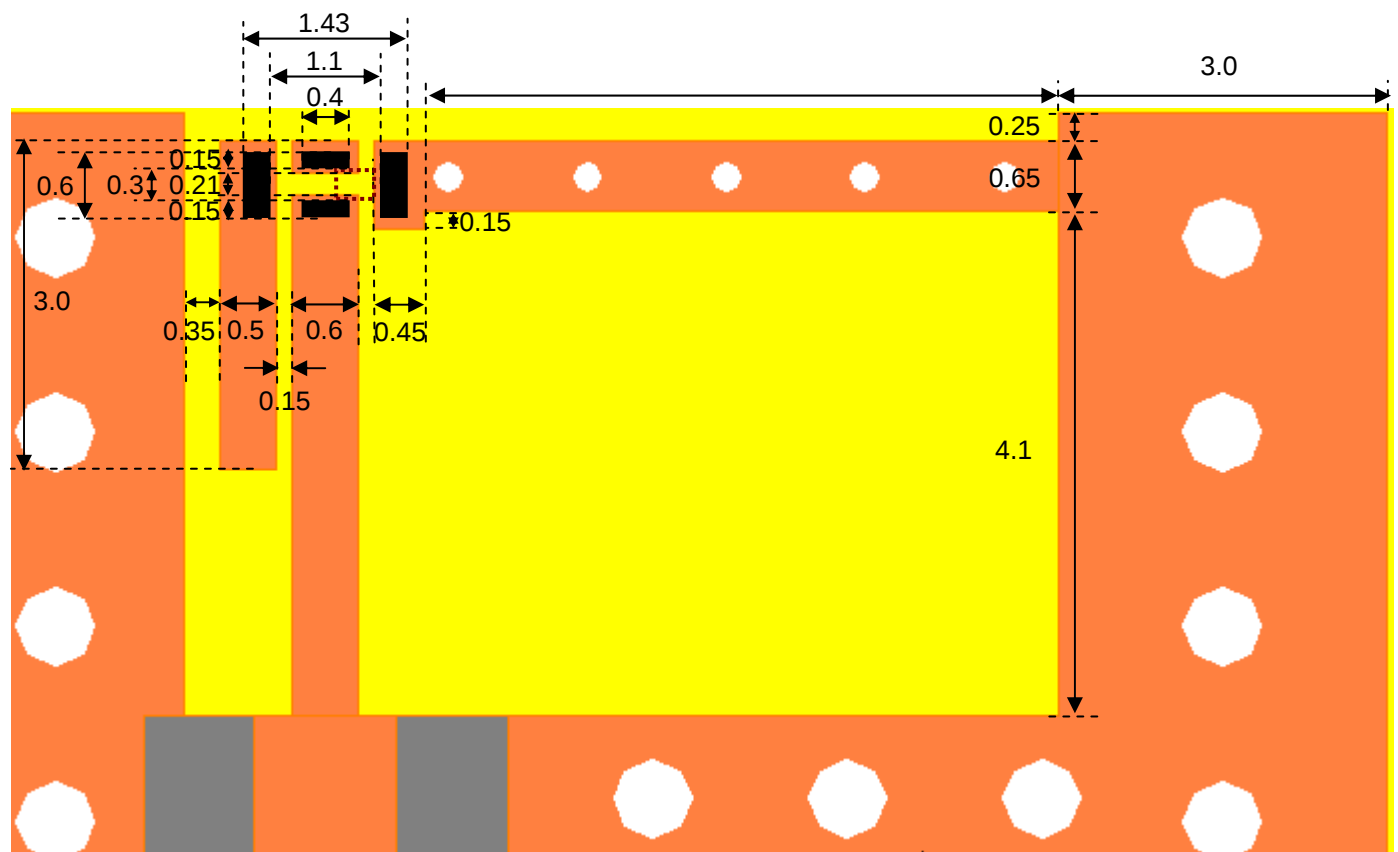
Application note of Scenario#2

❖ Test Board –Type A (Scenario#2)



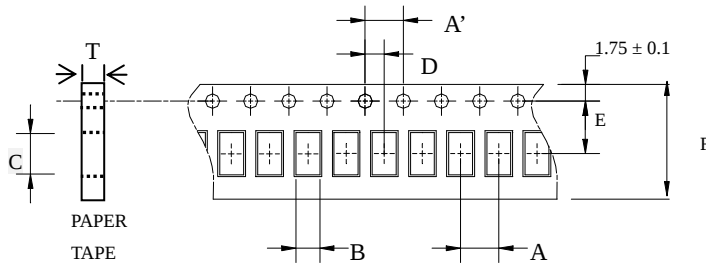
*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

❖ Antenna Footprint with matching _top view (Unit in mm)



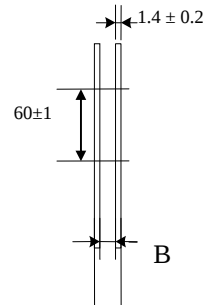
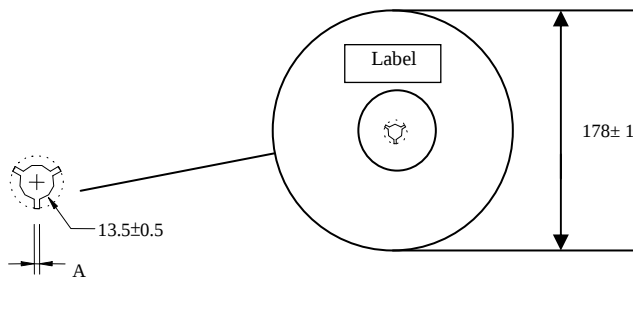
Taping Specifications

❖Tape Dimensions (Unit: mm) & Quantity



Type	A	A'	B	C	D	E	F	T	Quantity/reel	Tape material
1608	4.0± 0.1	4.0± 0.1	0.95± 0.1	1.80± 0.1	2.0± 0.1	3.5± 0.1	8.0± 0.1	0.60± 0.03	4,000pcs	Paper

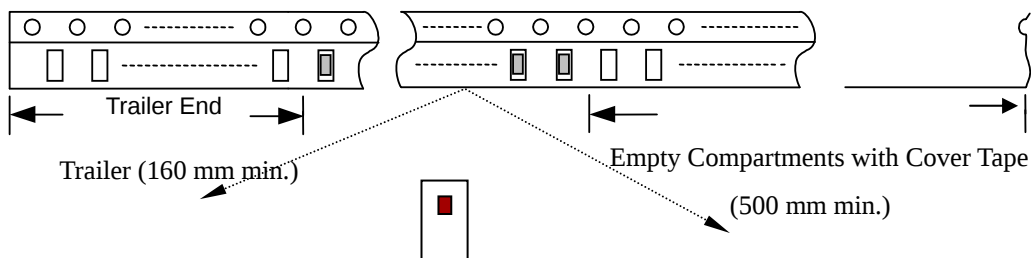
❖Reel Dimensions (Unit: mm)



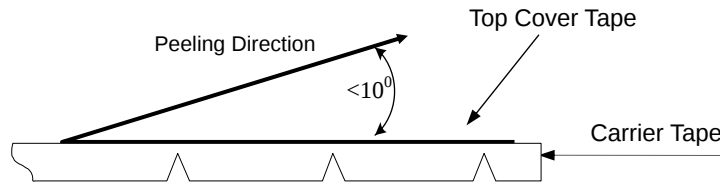
Label: Customer's Name,
ACX P/N, Q'ty, Date,
ACX Corp.

Type	A	B
1608	2.3±0.5	9.0±0.3

❖Leader and Trailer Tape



❖ Peel-off Force



Peel-off force should be in the range of 0.1 – 0.6 N at a peel-off speed of 300 ± 10 mm/min .

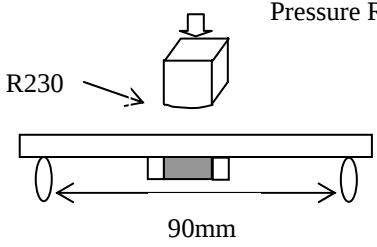
❖ Storage Conditions

- (1) Temperature: $5 \sim 35^\circ\text{C}$, relative humidity (RH): 45~75%.
- (2) Non-corrosive environment

Notes

- ❖ The contents of this data sheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

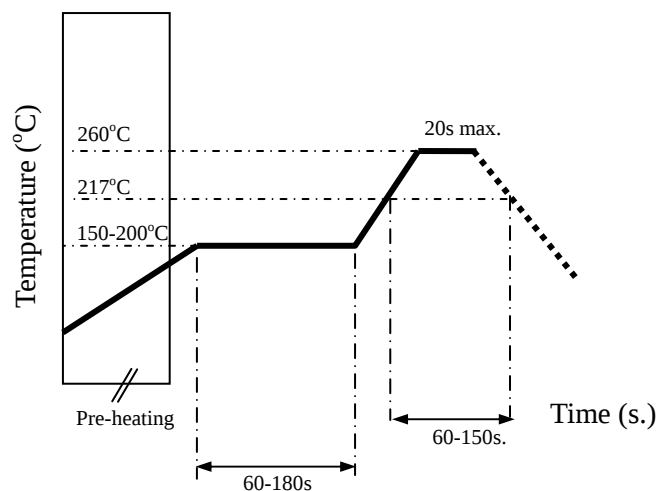
Mechanical & Environmental Characteristics

Item	Requirements	Procedure
Solderability	1. No apparent damage 2. More than 95% of the terminal electrode shall be covered with new solder	1. Preheat: $120 \pm 5^{\circ}\text{C}$ 2. Solder: $245 \pm 5^{\circ}\text{C}$ for 5 ± 1 sec
Soldering strength (Termination Adhesion)	1. 10N minimum	1. Solder specimen onto test jig. 2. Apply push force at 0.5mm/s until electrode pads are peeled off or ceramic are broken. Pushing force is applied to longitude direction
Deflection (Substrate Bending)	1. No apparent damage	1. Solder specimen onto test jig (FR4, 1.6mm) using the recommend soldering profile. 2. Apply a bending force of 2mm deflection 
Heat/Humidity Resistance	1. No apparent damage 2. Fulfill the electrical specification after test	1. Temperature: $85 \pm 2^{\circ}\text{C}$ 2. Humidity: 90% ~ 95% RH 3. Duration: 1000 ± 48 hrs 4. Recovery: 1-2hrs
Thermal shock (Temperature Cycle)	1. No apparent damage 2. Fulfill the electrical specification after test	1. One cycle/step 1 : $125 \pm 5^{\circ}\text{C}$ for 30 min step 2 : $-40 \pm 5^{\circ}\text{C}$ for 30 min 2. No of cycles : 100 3. Recovery: 1-2 hrs
Low Temperature Resistance	1. No apparent damage 2. Fulfill the electrical specification after test	1. Temperature: $-40 \pm 5^{\circ}\text{C}$ 2. Duration: 500 ± 24 hrs 3. Recovery: 1-2hrs

Soldering Conditions

❖ Typical Soldering Profile for Lead-free Process

Reflow Soldering :



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